

NASA TECH BRIEF



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Measuring Coplanarity of Surfaces

An interferometric technique has been devised to measure the coplanarity and flatness of lapped surfaces on which a high-precision mirror is to be mounted. This measurement technique differs from standard interferometric techniques in that it measures minute height variations of several small discrete surfaces simultaneously, whereas the standard techniques measure the height variations of a single continuous surface.

Conventional means of generating interference patterns on the test surfaces are employed. The patterns are obtained by placing an optical flat in simultaneous contact with the test surfaces and illuminating the setup with monochromatic light. The resulting interference patterns are photographed. The photographs are then analyzed to determine the height differences between the test surfaces as well as the flatness deviation of each of the surfaces. The determination is based on the number and straightness of interference lines appearing on each surface, the relative directions of line groups, the area of each test surface, and the wavelength of the monochromatic light.

Notes:

1. This technique is applicable to any instrument on which mirrors, prisms, or other optical components are to be mounted on three or more pads.
2. Inquiries concerning this technique may be directed to:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B67-10371

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

Source: M. M. Werner
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Category 02

